



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII

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Mr Richard Schassburger  
Department of Energy  
Rocky Flats Office  
P O Box 928  
Golden Colorado 80402 0928

RE Statistical and Geochemical Analysis of Manganese and  
Antimony in Groundwater at Operable Unit No 1

Dear Mr Schassburger

EPA received the report referenced above on April 22 1994 and after reviewing it has the following comments Considering that it was agreed on February 16 1994 to invoke the Gilbert methodology for a comparison of these metals to background the resulting report that DOE has submitted more than two months later is a disappointing effort and technically weak in several areas Nevertheless based on some of the information presented in this report and EPA's independent evaluation of the data the weight of evidence indicates that manganese and antimony are not contaminants in the groundwater at Operable Unit 1 (OU 1)

On page ES 2 five reasons are listed that could account for natural differences between the groundwater geochemistry of OU 1 and the groundwater geochemistry of background Reason #1 does not apply since all lithologies are found in both background and OU 1 and therefore the provenance is the same for all respective lithologies Reason #3 could only apply to deep bedrock since by definition hydrothermal mineralization involves higher temperature solutions than are found near the surface in the area of Rocky Flats None of the reasons presented here were actually tied to any data and so they are nothing more than unsupported hypotheses In addition the computer simulation that was presented in Appendix B does little other than indicate the spatial inadequacy of the sampling locations for the background geochemical study Overall EPA had expected that a more thorough effort would have been put forth to provide a solid geochemical explanation for this matter

This report states that the overall statistical test results for both metals indicate that the OU 1 concentrations are significantly different than background and therefore manganese and antimony are possible contaminants In reviewing these statistical test results several questions arose that DOE needs to address especially since this methodology is to be utilized for all future operable units Why was the comparison made to both 1992 and 1993 background datasets? The 1993 dataset has a much larger sample size and should therefore provide a more

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representative characterization of background concentrations EPA specifically informed DOE in late February that only the 1993 dataset should be used in the statistical tests. In addition all of the values presented as 1993 UHSU UTL<sup>99/99</sup>s in this report are different from those values presented in the Background Geochemical Characterization Report DOE 1993. Apparently these UTLs have been recalculated but this is not explained in the report. For this and future reports DOE must specify what dataset and UTLs are being used as background for data comparisons and provide an explanation for any differences from the 1993 report cited above.

Regarding historical use of manganese and antimony at RFP both are found in compounds used in the analytical laboratory processes in building 881 according to the Waste Stream & Residue Identification & Characterization Report DOE 1993. In addition historical chemical inventories also list various forms of manganese and antimony as being used on plant site. Therefore statements in the report on pages 3 14 and 4 15 that there are no records of manganese (or antimony) use in any RFP processes are incorrect. Although neither element is specifically known to have been stored or disposed of at OU 1 nothing more than unknown liquids and unknown chemicals were listed for IHSSs 104 and 103. Due to such unknowns the use of historical information to eliminate constituents that are statistically above background from consideration as site contaminants is not appropriate.

For antimony the possibility of false positives from aluminum interference adds more doubt to its presence as a contaminant. Nevertheless in Appendix A the highest value from well 37191 is shown as 210 ug/l with no qualifiers or validation code. This should be corrected or explained in section 4 3 5 where it is stated that this result is due to aluminum interference. However this also raises some data quality concerns. If false positives due to interference are suspected as frequently occurring an alternative method of analysis such as graphite furnace atomic adsorption method 204 2 should be utilized on a subset of duplicate samples.

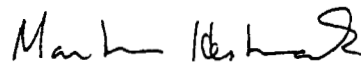
EPA has concluded that the erratic spatial and temporal elevated concentrations of manganese and antimony at OU 1 along with apparent development problems of well 37191 are the most compelling reasons to conclude that neither are contaminants in groundwater at OU 1. Therefore the portions of this report that pertain to these aspects sections 3 3 and 4 3 must be incorporated into the revised Final RFI/RI Report for OU 1. However statements that these metals were not historically used at the plant are incorrect and must not be included. Nor should section 3 3 3 be included unless DOE can better support its contention that the OU 1 groundwater geochemistry is naturally

different from background

Many uncertainties remain regarding the geochemistry of groundwater at Rocky Flats. This report presents observations without completely integrating and interpreting the data not only from groundwater but also from soils, bedrock, and water quality parameters. Without such analysis, gaps in our understanding of the groundwater geochemistry at RFP will cause further delays and undermine our efforts to achieve effective remedial actions.

If you have any questions concerning these matters, please contact Gary Kleeman or my staff at 294 1071.

Sincerely



Martin Hestmark, Manager  
Rocky Flats Project

cc Scott Grace DOE  
Zeke Houk EG&G  
Jeff Swanson CDH  
Tim Reeves Aguirre